

REMARKS

Reconsideration of the above-identified application in view of the foregoing amendments and following remarks is respectfully requested.

A. Status of the Claims and Explanation of Amendments

By this paper the specification is amended to include headings as requested by the Office action. Withdrawal of the objection to the specification is respectfully requested.

Claims 1-8 are pending; claim 8 is withdrawn from consideration. Claims 1-7 stand rejected. Claim 1 is amended to recite, *inter alia*, that “the graphite block of each of said mould side walls is formed of a stack of a multiplicity of elongate graphite laminae having opposite faces and inner edges, said inner edges jointly forming a graphite surface directed toward the mould cavity, and wherein each elongate graphite laminae has one or more apertures through which said coolant tubes are received such that the coolant tubes extend through the stack transversely to said opposite faces of the graphite laminae forming the stack.” Support is provided throughout the specification as originally filed. (*See, e.g.*, ¶¶ 0006 and 0007; *see also* claim 1.) No new matter is added.

B. Rejections in view of Oslund et al., U.S. 7,004,226

Claims 1-4 and 6-7 were rejected under 35 U.S.C. §§ 102(f) and 102(g) as allegedly being anticipated by U.S. Patent No. 7,004,226 to Oslund et al. (“Oslund”), and Claim 5 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Oslund. Claims 1-7 are also rejected on the ground of nonstatutory obviousness-type double patenting in view of Oslund.

Applicants thank the Examiner for the courtesy of discussing these rejections on October 6, 2006 via telephone. In accordance with the Examiner's suggestions during that discussion, applicants respectfully request reconsideration and withdrawal of these rejections.

Oslund and the present application share an identical foreign priority date of December 28, 2001, and also share an identical international filing date of December 18, 2002. Since Oslund does not predate the present invention, it is not available as prior art under 35 U.S.C. §§ 102(f) and 102(g).

Oslund was owned by or subject to an obligation of assignment to the same entity as the present invention when the present invention was made and therefore can not be held to preclude patentability under § 103. 35 U.S.C. § 103(c). As shown on the cover page of the patent, Oslund was assigned to Outokumpu Oyj, of Espoo, Finland, and was reassigned to Luvata Oyj as reflected by the assignment filed on October 10, 2006 and recorded at reel/frame 018367/0223. The present invention was similarly assigned by the inventors to Outokumpu Oyj, of Espoo, Finland, as reflected by the assignment filed on February 23, 2005 and recorded at reel/frame 015805/0241, and was reassigned to Luvata Oyj as reflected by the assignment filed on October 10, 2006 and recorded at reel/frame 018369/0561. Applicants respectfully request withdrawal of the rejections under § 103.

Finally, to overcome the double patenting rejection, filed herewith is a terminal disclaimer, pursuant to which any patent issuing from the present invention "shall be enforceable only for and during such period that it and U.S. Patent No. 7,004,226 are commonly owned."

C. Rejections in view of Smith et al., U.S. 3,435,881

Claims 1-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,435,881 to Smith et al. ("Smith"). Applicants respectfully submit that Smith

does not suggest or disclose what the applicant claims. As elaborated below, applicants request reconsideration and withdrawal of the §103 rejection over Smith.

Claim 1 as amended herein recites:

“A mould for continuously casting metal strips, comprising a pair of mould side walls ...,

each said mould side wall including a graphite block and a cooling system including coolant tubes,

wherein the graphite block of each of said mould side walls is formed of a stack of a multiplicity of elongate graphite laminae having opposite faces and inner edges, said inner edges jointly forming a graphite surface directed toward the mould cavity, and

wherein each elongate graphite laminae has one or more apertures through which said coolant tubes are received such that the coolant tubes extend through the stack transversely to said opposite faces of the graphite laminae forming the stack.”

The Office action states that

“Smith et al. substantially show the invention as claimed except that they do not show to form the molding surface with the inner edges of the graphite laminae and that the cooling passage is formed outside of the graphite plates (laminae). However, whether a liner is provided depends on the desirable smoothness of the molding surface and thus it would have been obvious to spare the liner if the smoothness of the inner edges of the graphite laminae in Smith et al. is good enough for a casting process.

Further, it would have been obvious to locate the cooling passage within the graphite laminae ... if more intensity of cooling [were] needed.”

Smith is directed to an “Anisotropic Continuous Casting Mold” comprising an anisotropic material to transfer heat from the melt substantially in the direction perpendicular to the inner surface of the mold, with little heat transfer parallel to said surface. Among the embodiments disclosed by Smith is a mold having walls formed of a vertical stack of pyrolytic graphite blocks between a liner of vitreous carbon on the inner surface of said stack and a heat sink comprising, for example, a copper block around coolant ducts on the outer surface of said stack. (Smith col. 3, lines 20-56; figure.) Specifically, Smith discloses a mold comprising a graphite block formed of multiple anisotropic pyrolytic graphite plates of about ½ inch thickness *and a liner of vitreous carbon.* (See Smith col. 2, lines 22-30 and 55-59; Smith claim 1.)

The Office action admits that Smith does “not show to form the molding surface with the inner edges of the graphite laminae”, but states that “it would have been obvious to spare the liner” if the graphite plates of Smith formed a sufficiently smooth inner surface. (Office action at 4.) Applicants respectfully disagree. Rather than to suggest that a liner is optional, Smith discloses that “[i]t is very difficult to have a perfect match between adjacent plates”, which difficulty is exacerbated by the significant thermal expansion of the mold at operating temperatures. (Smith col. 2, lines 32-64.) To avoid having molten metal penetrate between individual graphite plates which “may cause tearing of the pyrolytic graphite plates and of the metal surface as the metal tends to move through the mold,” Smith teaches to include a “thin liner of vitreous carbon between the cast metal and the anisotropic mold” (Id. at 36-39 and 56-58; *see also* Smith claim 1.)

Claim 1 expressly recites mould side walls, each including a graphite block wherein:

“the graphite block of each of said mould side walls is formed of a stack of a multiplicity of elongate graphite laminae having opposite faces and inner edges, said inner edges jointly forming a **graphite** surface directed toward the mould cavity,” (emphasis added.)

In contrast, Smith teaches an inner mold surface of vitreous carbon, which has lower density and thermal conductivity than the graphite block (in the a-b plane). (*See* Smith col. 4, lines 12-51.)

The Office action also admits that Smith discloses cooling passages outside of the graphite plates, but states that “it would have been obvious to locate the cooling passage within the graphite laminae ... if more intensity of cooling [were] needed.” (Office action at 4.)

However, holes through the graphite plates of Smith would have to be drilled or otherwise bored in order to pass the cooling passages through said plates. In contrast, apertures can easily be punched through the graphite laminae of the present invention, since the laminae are much thinner than graphite plates.

Given that applicant’s invention is functionally and structurally distinguishable over Smith, and that each element of the present invention is not disclosed or suggested by Smith, applicants submit that the instant invention defined in claim 1 is patentable. Furthermore, since claim 1 is believed to be patentable, applicants respectfully submit that claims 2-7, which depend from claim 1, are also patentable.

CONCLUSION

For the above-stated reasons, this application is respectfully asserted to be in condition for allowance. An early and favorable examination on the merits is requested. In the event that a telephone conference would facilitate the examination of this application in any way, the Examiner is invited to contact the undersigned at the number provided.

THE COMMISSIONER IS HEREBY AUTHORIZED TO CHARGE ANY ADDITIONAL FEES WHICH MAY BE REQUIRED FOR THE TIMELY CONSIDERATION OF THIS AMENDMENT UNDER 37 C.F.R. §§ 1.16 AND 1.17, OR CREDIT ANY OVERPAYMENT TO DEPOSIT ACCOUNT NO. 13-4500, ORDER NO. 4872-4711.

Respectfully submitted,
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